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ABSTRACT

Sex differences in children's physical activity levels, and associations between girls' activity level, childrearing characteristics and parent-child play behavior were investigated in a quasi-naturalistic situation. As part of a longitudinal project, 144 third grade children were videotaped in a 1-hour play session with one of their parents. A variety of toys, ranging from active (for example, a set of styrofoam sabres) to selentary (puzzles) was available for play. The videotapes were coded for behavioral and mood variables, and these scores factor-analyzed to produce four factors for children (Physically Active Play, Solitary Play, Buoyant Mood and Physical Contact Seeking) and four for parents (Sociable Play, Active Play, Talkative Play and Buoyant Support). There was no difference between girls and boys in frequency of Physically Active Play, but girls engaged in more Buoyant Play and Physical Contact Seeking, boys in more Solitary Play. Discussion of parental characteristics focuses on parents of Physically Active girls, although data for boys is provided in tables. These girls' parents tended to be non-conventional and to be lax rather than firm. Mothers were career oriented and did not emphasize household structure and orderly schedules. Fathers encouraged independence in their daughters. In addition, girls from small families were most likely to be physically active. Ratings of parent behavior in the play session indicated that the parents of physically active girls were themselves significantly more active than parents of less active girls. (Author/SS)

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GIRLS' PHYSICALLY ACTIVE PLAY AND PARENTAL BEHAVIOR

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It has long been assumed in our society that boys are more physically active than girls, and that they are more prone to take part in, and to enjoy, organized physical activities such as sports. For that reason, boys have been provided with larger playing spaces, more coaches, and larger budgets for sports. As recently as seven years ago, girls (or women) were not allowed to run officially in the Boston Marathon, or any other marathon, for that matter, since it was assumed that running any distance over three miles would strain them unmercifully. These consequences, together with many other quaint notions, spring from the idea that boys are naturally--in quotes--more physically active than are girls. Thus throughout the years girls and women have suffered from the belief in their low level of vigor and activity in at least three ways: first, they have been provided with limited territory for their physical activities; second, they have been assigned only a limited budget for coaches, uniforms, travel and so forth; and third, they have been held back by official rules restricting the conditions of their participation. If, indeed, girls and women have been less physically active than their male counterparts under these conditions, it is questionable whether their lack of participation is due to some natural lack in ability or talent, or, rather, to these very rules and restrictions.

One way to gather information on this point is to explore the activity levels of females and males when they are placed in an identical setting, a setting which is age-appropriate, and which provides a free choice of activities ranging from the most sedentary to the most vigorous. The data

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to be discussed today were gathered in just such a setting, using 8 and 9 year old girls and boys as subjects.

But first I would like to return to the question of whether, despite societal beliefs in the affirmative, a sex difference in physical activity level has been established. In their section reviewing this matter in The Psychology of Sex Differences, Eleanor Maccoby and Carol Jacklin claim that the difference is still unproven one way or the other. Nevertheless, when we look at those studies beyond the very earliest years, in the period when a gender-related difference might have had time to establish itself, we find that in every instance in which a sex difference in activity level has been demonstrated, it is in favor of boys, never of girls. Further, Jeanne Block, in her review of the Maccoby and Jacklin book, contends that several studies that were excluded, for one reason or another, from the Maccoby and Jacklin list, conclude that boys are more physically active than girls. The great majority of these studies, however, took place in relatively large public settings--schoolyards, for example, or classrooms, and thus were subject to myriad uncontrolled factors, factors which could very well act to increase the activity of one sex while decreasing the activity of the other sex. Indeed, Maccoby and Jacklin address this very issue by arguing that the presence of other children, especially boys, serves to act as a trigger to release activity in boys, while no such effect takes place for girls. An alternate explanation, more in line with the theme of this paper, is that the social milieu of the schoolyard acts not so much to trigger boys' activity, but rather acts to suppress girls' activity, turning them into spectators, and causing them to repress the natural joy to be found in the movement of their bodies.

The question remains, then, whether, left to their own devices, and freed from society's proscriptions, girls and boys are equally vigorous and enjoy physical pursuits equally well. Further, given that some girls are more physically active than others, what is it about the families of these girls that differentiates them from the families of their more sedentary peers?

The data presented here were drawn from an ongoing longitudinal study at the Institute of Human Development in Berkeley, California.[1] 164 children, together with their parents, have been studied over the last twelve years, first in nursery school, then in third grade, and currently in the ninth grade. The children are mostly from white, middle class homes. At Time 2, the time at which the data reported here were collected, the children were aged 8 or 9 years old. As part of an ongoing series of appointments for observations and interviews, the children came to our playroom twice, first alone and then accompanied by one parent. Unless otherwise indicated, the data presented here are drawn from the second, parent-play session. The nearly forty toys available for play ranged from traditionally female, a dollhouse together with family dolls and pets, to traditionally male, castles and moats with knights in armor, and horses. The toys also varied in degree of activity level, from sedentary, puzzles and drawing materials, to active, a mini-trampoline. The so-called "sports equipment" consisted of three

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toys--a pair of large, heavy wooden stilts, which required shoulder strength and balancing skill; a small trampoline, emphasizing lower body strength; and a set of styrofoam sabres, called boffers, with which parents and children could fence or just beat each other up. An attempt was made to provide an equal number of male and female toys at every activity level.

It was left up to the individual families to decide which parent would accompany the child, and from the total sample, 56 girls were accompanied by mothers and 13 by fathers, while 68 boys came with their mothers and 8 with their fathers. Since so few fathers attended, the child data from mother-accompanied and father-accompanied sessions were pooled. The play session lasted about an hour and was videotaped. At the conclusion of the data collection period, the videotapes were independently coded for behavioral and mood variables by two raters, in order to determine reliability. Item reliabilities ranged from .53 to .98 with a median of .87. Using principle components factor analysis, four factors were extracted from the child data, with the first one, called "Physically Active Play," being most heavily loaded on Runs or Jumps, Boffing Activity, Initiates Play and Joins Game (Figure 1). It is this factor that is used later to relate child activity to parental and family characteristics. The other factors were named Solitary Play, Buoyant Mood and Physical Contact Seeking.

Documentation of the findings is contained in your handout, and will be omitted from my verbal presentation. For your own use, I have included the correlations for the boys also, although their results will not be discussed today. Results will be presented in the following order: sex differences in Activity Level, associations between parental characteristics and girls' Physically Active Play, and the effects of family constellation.

Of the four child factors extracted, sex differences showed up in every factor except Physically Active Play (Table 1). Here the girls' mean was actually a little higher than the boys, although not significantly so. Further analysis showed that, while the levels of Sit, Stand, and Run or Jump showed no sex difference (Table 2), boys were significantly more likely to use the boffers than girls, and girls were significantly more likely to play with the stilts than boys (Table 3). However, the average number of minutes that girls and boys used the boffers once they had started in was virtually identical--2.9 minutes for girls, 3.0 minutes for boys. And if we look only at that subset of girls who were accompanied by mothers, we f'nd that in this situation girls actually tended to use the sports equipment more than boys ($p \leq .08$). Evidently girls welcomed the chance to have their mothers help them, especially with the heavy stilts, for girls more than doubled their use of the stilts during the parent plays with child session, compared to their usage during a previous, solitary play session, while boys' use of stilts and trampoline remained constant regardless of the presence or absence of a parent (Table 4).

Overall, then, with the single exception of the tendency to use the boffers, the girls' activity level, and their use of the sports equipment, was quite comparable to that of the boys, and our data suggest that, given a safe and supportive environment, together with a helper or coach, girls do have the capacity to enjoy physical pursuits. Further, in the session as a whole, girls tended to be higher on the factor "Buoyant Mood" (Table 1), indicating that they not only want to take part in physical activities, but they actually enjoy such participation. I hasten to point out, however, that this relatively high level of activity on the part of girls occurred

only in this session; in the study as a whole, the ratings of the children in other settings, for example at home and at school, showed that boys are rated as being significantly more active at nursery school age, and more competitive in third grade, than girls. Even in the solitary play session, boys chose to stand while playing their fantasy games, while girls would more often sit (Table 5). Our current finding that girls can come close to, or match, the activity level of boys, holds only for the most optimal situation--a situation where competition is minimal and peer pressure and ridicule non-existent, and where, in addition, the girls have the support of their parents, especially mothers.

We turn now to an investigation of the aspects of family life which predict activity level in girls. The child factor Physically Active Play was correlated with a number of variables based on independent ratings of parental characteristics (Figure 2). Analysis of these results shows that girls who were physically active tended to come from non-conventional families, in which both parents were judged to be lax rather than firm, and where mothers did not maintain household structure and child's regime and fathers were not conventional (Table 6). Additionally, mothers were strongly likely to be career oriented, that is, to invest many hours a week in studying for, or working at, a high status occupation. The picture is that of a family where, in their own ways, both parents have broken with tradition, fathers by actually encouraging independence in their daughters, and mothers by building a career and letting the housework go. Girls who are still being raised in traditional families, where mother stays home and polishes the floor and father protects his little girl from harm, are much less likely to be physically active even in our sheltered environment.

A second way in which parents can influence the activity level of their daughters is by their behavior in the session itself. The parents of physically active girls were themselves significantly more active ($r = .55$, $p \leq .01$). (Parents had also been provided with a supply of magazines, so they had the opportunity to be sedentary if they wished.) By rejecting this option, and choosing instead an active play style, parents were themselves modelling pleasure in the use of their bodies for their young daughters.

Finally, although in actual fact girls liked physical play just as much as boys did, parents of girls overall engaged in less Active, and more Sociable play than parents of boys (Fig. 3, Table 7). The play session was constructed to be a child-accompanied-by-parent event, not an adult entertainment, and if we assume that parents tried to match their play choices (at least to some extent) to those of their children, then the preponderance of Active play with boys, and Sociable play with girls, may indicate that parents respond more to their own expectations, based on sex-role stereotypes, than they do to the realities of their own physically active daughters.

The correlations between family constellation and girls' activity level produced some interesting findings (Table 8). First, it is girls from small families that are the most likely to be physically active. In addition, girls with younger sisters liked the active toys, while those with both brothers and sisters were more sedentary in their play. Possibly in these mixed-sex families sex-roles become polarized, with parents expecting their sons to take the active role, and reserving for girls the part of the sedentary onlooker. In the study as a whole, there is a slight

tendency for the fathers of boys with younger sisters to engage in sex stereotyping in relation to their sons more than fathers drawn from other family constellations ($r = .21$, $p < .12$). Since the classroom and the schoolyard mimic this situation of mixed-sex play on a much larger scale, it is perhaps not surprising that there, too, boys are active in their play and girls sedentary.

Further, the finding that, when placed in a protected situation where they had equal opportunity for strenuous play, girls liked physical activity nearly as much as boys, suggests that previous observations of girls' inactivity made in places such as schoolyards may be dependent on other elements in the situation. For example, girls at school may avoid competitive play, or avoid territories such as playing fields that have been traditionally reserved for males. They may also be especially sensitive to the sort of ridicule that children mete out to those who try to play in boys' territory, or who fail to make a basket, or a goal. Girls' lack of training and experience, and their relative lack of strength at certain ages, make them especially vulnerable to this kind of failure.

In order to compensate for some of these inequities, school authorities could make some changes in the play conditions at school. For example, the provision of an area, stocked with the equipment necessary for the active games that girls do like, would go far to equalize the activity level of play. This area could provide bars for climbing, and swings, two traditionally female activities, but in addition places for roller skating, dancing, jump rope and jogging could be provided. School authorities might lend out jump ropes and roller skates just as they now lend out balls and bats. Also, a helper or coach could be provided to get the girls started.

Although such an arrangement smacks of a "separate-but-equal" policy, in actuality it does no more than extend to both girls and boys the opportunity to take part in activities which they particularly enjoy, opportunities that have never been denied to boys.

Parents, too, can do much to increase their daughters' interest in active sports, by modelling an active life style and by allowing them the opportunity to be independent. In the last few years, women have shown a significant increase in their interest in participating in sports, especially sports like jogging where the competitive element is kept to a minimum. Many women prefer to compete against themselves, and therefore still avoid team sports, but others, once they have built themselves up to the necessary level of competence, branch out into fields like long distance running, and enjoy the sense of achievement which comes from winning a hard fought race.

The relatively high level of girls' physically active play discussed in this paper was obtained under close to optimal conditions. It remains to be seen whether, and under what conditions, this level can be generalized outside the protected environment of the experimental play room. Recent developments in women's sports, including long distance running, suggest that indeed it can.

References

1. Maccoby, E. and Jacklin, C. The Psychology of Sex Differences. Stanford: Stanford University Press, 1974.

2. Block, J. Assessing Sex Differences: Issues, Problems and Pitfalls. Merrill-Palmer Quarterly, 1976, Vol. 22, No. 4.

Figures and Tables to Accompany
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FIGURES

Figure 1

Summary of Variables with Significant Factor Loadings on the Four Child Play Factors

Physically Active: Run/Jump, Boffing Activity, Initiate Play, Join

Solitary Play: Fantasy Vocalization, (Not) Sit, Play Battle

Buoyant Mood: Laugh, Look at Parent, Not Depressed

Physical Contact Seeking: Touch Parent, Self Grooming, Cooperative Play

Figure 2

Summary of Variables with Significant Factor Loadings on Parent Socialization Clusters

Firm: Firm Enforcement, Enforcement After Initial Noncompliance, Cannot be Coerced by Child

Maintains Household Structure and Child's Regime: Maintains a Structured Household, Sets Schedule for Child, Keeps Physical Order and Cleanliness in Home

Conventional: Uses Sex Stereotypes to Evaluate Child's Behavior, Sex Stereotypes Self, Discourages Traits in Child Traditionally Characteristic of Other Sex

Encourages Independence: Encourages Independent Action, Allows Child Physical Freedom to Explore, Does Not Set Schedule for Child, Minimally Protective

Figure 3

Summary of Variables with Significant Factor Loadings on the Four Parent Play Factors

Sociable Play: Involved in Play, (Not) Distant, Instruct Child, Talk

Active Play: Stand, (Not) Sit, Run/Jump

Buoyant Support: Laugh, Look at Child, Not Depressed, Compliment Child

Abrasive Talk: Criticize Child, Order Child, Fantasy Vocalization

Tables

Table 1.

Sex Differences in Child Play Factor Scores

	GIRLS(N=69)		BOYS(N=75)		t-test	
	M	S.D.	M	S.D.	t	$p \leq$
Physically Active	.07	1.01	-.05	.99	.68	
Solitary Play	-.2	.84	.23	1.08	-3.06	.04
Buoyant Mood	.15	1.01	-.16	.98	1.92	.06
Physical Contact Seeking	.19	1.05	-.12	.97	1.86	.07

Note.-- M=0, S.D.=1.

Table 2.

Sex Differences in Child Activity During Parent Plays Session

	GIRLS			BOYS			t-test	
	M	S.D.	N	M	S.D.	N	t	$p \leq$
Overall Activity Score	11.94	6.10	69	11.26	3.40	76	.82	
Sit/Lie	3.87	1.14	69	3.55	1.46	76	1.47	
Stand/Walk	2.64	1.40	69	2.83	1.42	76	-.82	
Run/Jump*	.74	.90	69	.63	.75	76	.78	
Persistence at Boffing**	2.92	2.54	26	2.98	2.84	40	.01	

* Includes use of "Sports Equipment".
**Average number of minutes spent playing with boffers for those children who used boffers at all.

Table 3.

Child's Use of "Sports Equipment"

	GIRLS (N=69)				BOYS (N=76)				χ^2	$p \leq$
	USED		DID NOT USE		USED		DID NOT USE			
	N	%	N	%	N	%	N	%		
Boffers	27	39.1	42	60.09	43	56.6	33	43.4	4.41	.04
Stilts	26	37.7	43	62.3	16	21.1	60	78.9	4.85	.03
Trampoline	11	15.9	58	84.1	5	6.3	71	93.7	3.24	.08

Note.--%=percent of children of the same sex.

Table 4.

Comparison of Sports Usage* during Child Plays Alone Session and Mother-Attended Session

	GIRLS PLAY ALONE			GIRLS WITH MOTHERS			t-test		BOYS PLAY ALONE			BOYS WITH MOTHERS			t-test	
	M	S.D.	N	M	S.D.	N	t	$p \leq$	M	S.D.	N	M	S.D.	N	t	$p \leq$
Stilts	.21	.41	52	.58	.82	52	-3.13	.01	.20	.48	60	.20	.44	60	0	
Trampoline	0	0	52	.12	.32	52	0		.02	.13	6	.07	.25	60	-1.35	

Note.-- Boffers not available during the Child PLays Alone session.

Table 5.

Sex Differences in Child Activity Level During Child-Plays-Alone-Session

	GIRLS (N=71)		BOYS (N-75)		t-test	p≤
	M	S.D.	M	S.D.		
Overall Activity Score	12.63	3.68	13.99	3.28	-2.35	.02
Sit/Lie	5.54	1.38	4.53	2.08	3.52	.01
Stand/Walk	3.00	1.72	4.08	1.92	-3.57	.01
Run/Jump*	.37	.74	.41	.81	-.37	

*Includes use of stilts and trampoline.

Table 6.

Significant Correlations Between Girls' Physically Active Play and Parental Characteristics

	GIRLS			BOYS		
	r	N	p≤	r	N	p≤
Mother						
Career Oriented	.45	66	.01	-.19	68	
Firm	-.25	69	.04	.04	75	
Maintains Household Structure and Child's Regime	-.30	68	.01	.22	75	.05
Father						
Firm	-.26	61	.05	.07	71	
Conventional	-.29	61	.02	.20	71	
Encourages Independence	.26	61	.05	-.06	71	

Table 7.

Sex Differences in Parental Behavior during Play Session

	PARENTS OF GIRLS (N=70)		PARENTS OF BOYS (N=75)		t-test	
	M	S.D.	M	S.D.	t	p≤
Sociable	.17	.98	-.18	1.00	2.10	.04
Active	-.17	.94	.16	1.04	-1.96	.05
Gives Buoyant Support	.01	1.03	.01	.97	0	
Engages in Abrasive Talk	.05	1.03	-.10	.94	.95	

Table 8.

Significant Correlations between Girls' Activity Level and Family Constellation

	GIRLS			BOYS		
	r	N	p≤	r	N	p≤
Family Size						
Number of children in family	-.31	69	.01	-.02	72	
All Siblings						
Child has brothers as well as sisters	-.26	64	.04	-.02	68	
Younger Siblings						
All younger sibs female	.31	36	.07	-.25	41	
Younger sibs both male and female	-.31	36	.07	-.10	41	